Model S5000 MCArd MCA and AHV-2PC HVPS

User's Manual

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SYSTEM
CERTIFIED

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Notes

1. Introduction

The Series 5000 MCA is operated entirely by software. Other than the switches set during the initial installation, there are no switches or knobs to adjust when operating the MCA. All settings and adjustments are done from on-screen menus using standard Genie2000 software. This capability allows you to maintain multiple system setups, downloading the required configuration as needed. No manual dial adjustments are necessary. The system is ready for routine sample analysis simply by calling up predefined calibration/setup files.

Software support is available with the Genie-2000 platform under Windows® 98/Me, Windows NT®/2000 or Windows XP. The supporting software extends the capability of the system to meet a wide range of application requirements.

- This manual describes how to configure a Series 5000 MCA for use with Genie-2000 software and how to adjust its controls.
- For important operating information, please refer to Appendix A, “Notes on Series 5000 Operation” on page 26.
- For information on installing the MCA board, refer to the *Series 5000 MCArd Hardware Manual*.
- For detailed description of the Genie-2000 software refer to the *Genie-2000 Operations Manual*.

2. Defining the Series 5000

After you have installed the card and the Genie-2000 software, the first step in using your Series 5000 MCA board is to create an MCA Input Definition (MID).

MID Wizard or MID Editor?

For most cases, you'll use the MID Wizard in the next section to help you set up your Input Definition quickly and easily. If your Input Definition is more complex than the MID Wizard was designed to handle (such as multiple groups or special device settings), you'll use "MCA Input Definition Editor" on page 6 to create or change your definition.

The MID Wizard

To use the MID Wizard, open the Genie-2000 folder and select the MID Wizard icon to see the Step 1 screen.

Step 1

You'll see a list of supported MCAs, as shown in Figure 1. Scroll down to and select the desired Series 5000 MCA, then press **Next** button.

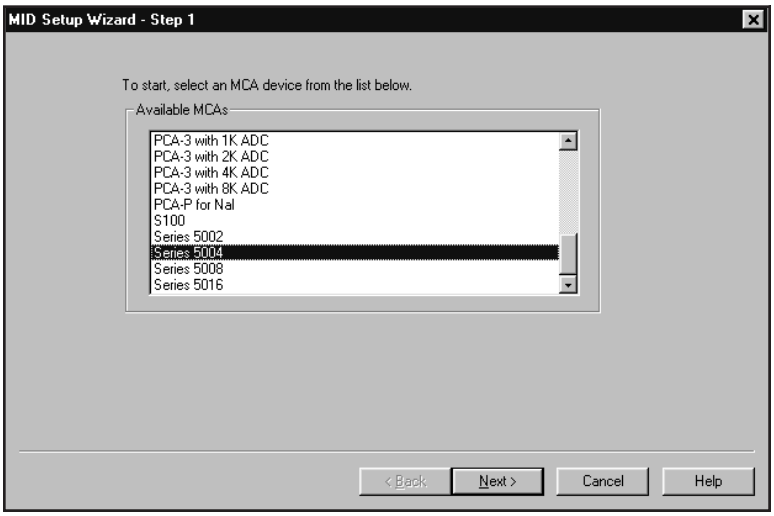

Figure 1 Selecting the MCA

Step 2

The next screen will ask you to specify the MCA's board number and base address, as shown in Figure 2.

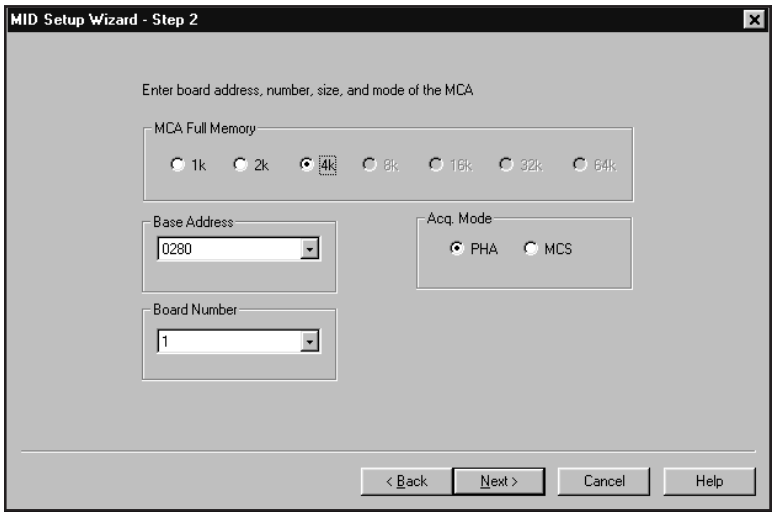

Figure 2 Defining the Base Address

The Number of ADCs is fixed, since a single ADC system is the only configuration offered for the Series 5000 MCAs. Full memory size selection that will be enabled is based on the MCA model selected as follows:

Model	Supported Memory Sizes				
S5002	2k	1k			
S5004	4k	2k	1k		
S5008	8k	4k	2k	1k	
S5016	16k	8k	4k	2k	1k

Each Series 5000 MCA to be installed into the same host computer requires the selection of a base port and a unique board number. Any combination can exist as long as the settings for each installed board are unique. Possible values for base address are 280 hex and 180 hex. Possible values for board number are 1 through 8.

The base address and board number selected here must match the hardware settings. Refer to the *Series 5000 MCArd Hardware Manual* for address and board switch settings.

Step 3

In the Step 3 screen, shown in Figure 3, the supported amplifier configuration and desired high voltage power supply must be specified.

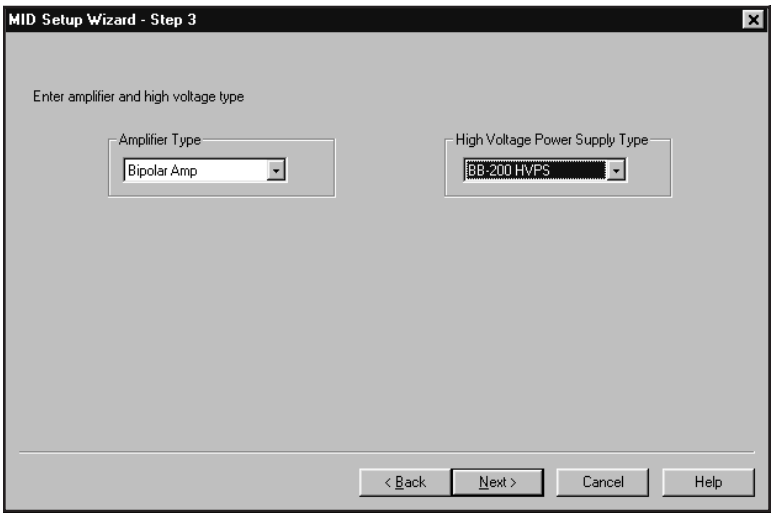

Figure 3 Selecting the Amplifier and the HVPS

The choices for amplifier type will vary depending on the selected MCA type. No adjustable parameters will be presented here for the selected amplifier. All major parameters will be available at run-time.

Step 4

You won't see the screen for Step 4; this step is not used when setting up a Series 5000 MCA.

Step 5

The Step 5 screen shows the parameters for the selected high voltage power supply. The Manual HVPS and BB-200 HVPS power supplies have no adjustable parameters. The parameters for the AHV-2PC HVPS are shown in Figure 4.

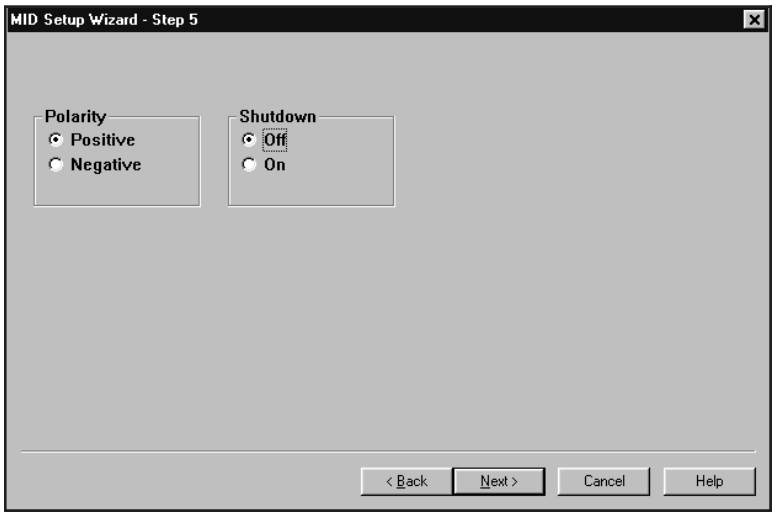

Figure 4 Selecting the Range for the AHV-2PC HVPS

Step 6

The final screen is shown in Figure 5. Here an input name must be specified. Pressing **Finish** will write the configuration file to the disk, load the current definition into the run-time database, and request whether to exit the MID Wizard or return to the first step for another definition.

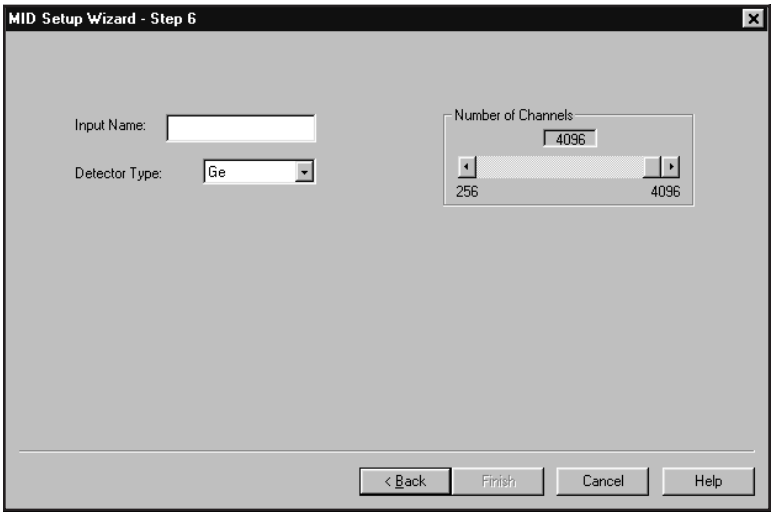

Figure 5 Assigning the Detector

The MCA Input Definition Editor

Most users will not need to use the MCA Input Definition (MID), an application which allows you to create, edit, and manage input definitions. For most users, the facilities provided in the MID Wizard are sufficient. You'll have to use the MID Editor only if you want to change any of the parameters from their default values. Multiple Memory Groups are selectable only from within the MID Editor. The editing procedure is described in "Editing an MCA Definition" in the MCA Input Definition chapter of the *Genie-2000 Operations Manual*. That chapter also has detailed information on using the MID Editor.

Opening the MID Editor

To use the MID Editor, open the Genie-2000 folder and select the MID Editor icon, then select **Edit | Add MCA** to see the MCA Definition table in Figure 6.

To begin, click on the **Series 5000** entry for your board in the Definition Table to select it as the MCA to be set up, as shown in Figure 6.

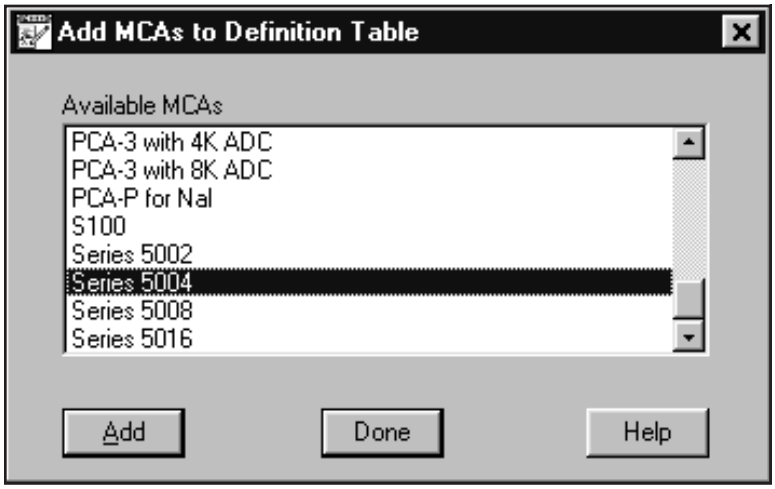

Figure 6 Adding the MCA

Device Setup

The Device menu sets the parameters for the system's hardware, starting with the MCA itself. There is a command in the **Device** menu, shown in Figure 7, for each of the hardware sections of the MCA. The disabled (grayed) commands do not apply to the MCA currently being set up.

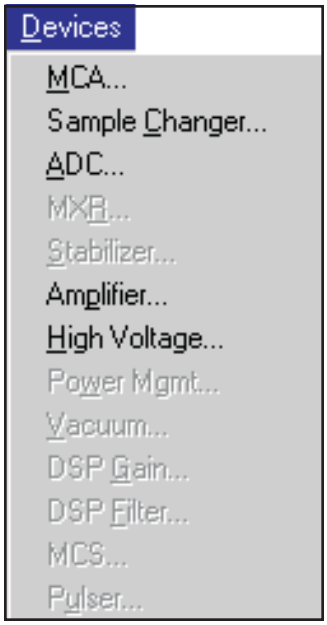

Figure 7 The Device Setup Menu

MCA

Select the **MCA** command in the **Device** menu to see the Device Setup dialog Box shown in Figure 8.

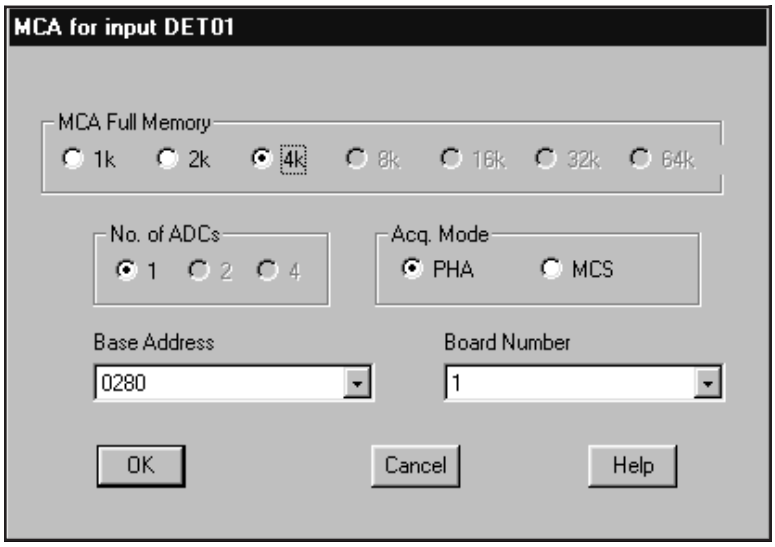

Figure 8 The MCA Device Setup Dialog

Full Memory and Number of ADCs

The Number of ADCs is fixed, since a single ADC system is the only configuration offered for the Series 5000 MCAs. Full memory size selection that will be enabled is based on the MCA model selected as follows:

Model	Supported Memory Sizes				
S5002	2k	1k			
S5004	4k	2k	1k		
S5008	8k	4k	2k	1k	
S5016	16k	8k	4k	2k	1k

Base Address and Board Number

Each Series 5000 MCA to be installed into the same host computer requires the selection of a base port and a unique board number. Any combination can exist as long as the settings for each installed board are unique. Possible values for base address are 280 hex and 180 hex. Possible values for board number are 1 through 8.

The base address and board number selected here must match the hardware settings. Refer to the *Series 5000 MCArd Hardware Manual* for address and board switch settings.

PHA and MCS

Any Series 5000 MCA can operate in either PHA or MCS acquisition mode. If PHA is selected, further references to MCS will not be made in the remaining section of the MID Editor or in the Adjust dialogs later.

Sample Changer

If you're going to be using a **Sample Changer**, select that command from the **Device** menu to see the Dialog Box shown in Figure 9.

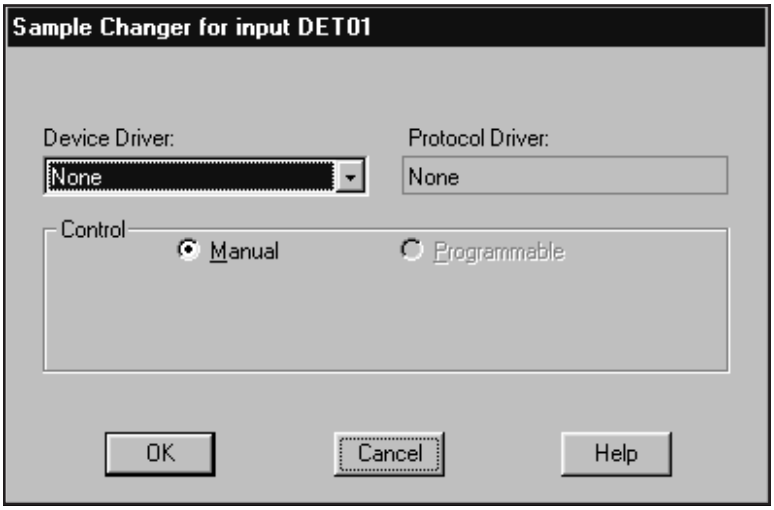

Figure 9 The Sample Changer Dialog

Device Driver

Initially this is set to None, indicating that no Sample Changer is going to be used. To change the setting, from the Device Driver drop-down list select **LPT Sample Chgr** as shown in Figure 10.

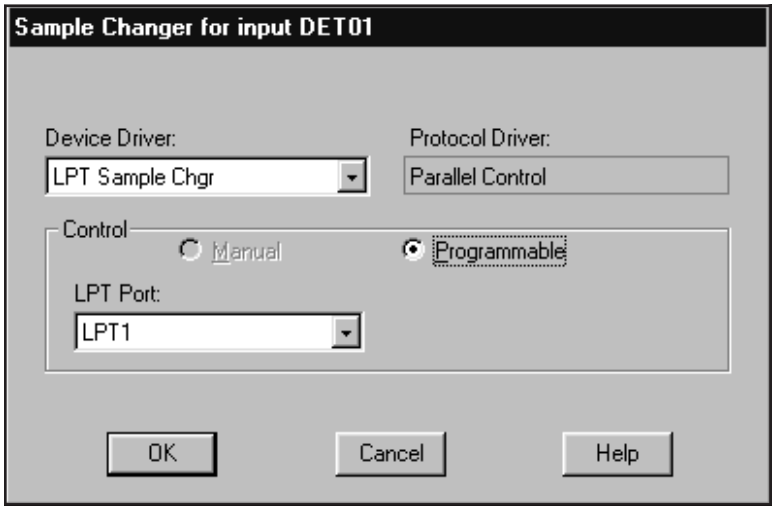

Figure 10 Selecting the LPT Sample Changer

Control

Only **Programmable** control is offered, it is the only type of Sample Changer control available with the Series 5000, but you do have a choice of the LPT Port which will be used. The Series 5000 Sample Changer interfaces with the changer hardware through a parallel (LPT) printer port, and the **LPT Port** drop-down list allows you to specify which port it is attached to. From the drop-down list, select your choice for the port.

ADC

Since the Series 5000 can only use the internal ADC, you don't need to use this command. The only choice in this command is the **Internal Programmable ADC** that has already been preselected.

Amplifier

The **Amplifier** command shown in Figure 11, specifies which type of amplifier configuration to use with the selected Series 5000 MCA. The amplifier selection that can be made through the Device Driver drop-down list varies with the selected MCA model, as follows:

Series 5002:	Bipolar	External		
Series 5004:	Bipolar	External	Unipolar	Gated Integrator
Series 5008:	Bipolar	External	Unipolar	
Series 5016:	Bipolar	External	Unipolar	Gated Integrator

Click on the drop-down arrow and choose the desired type from the list.

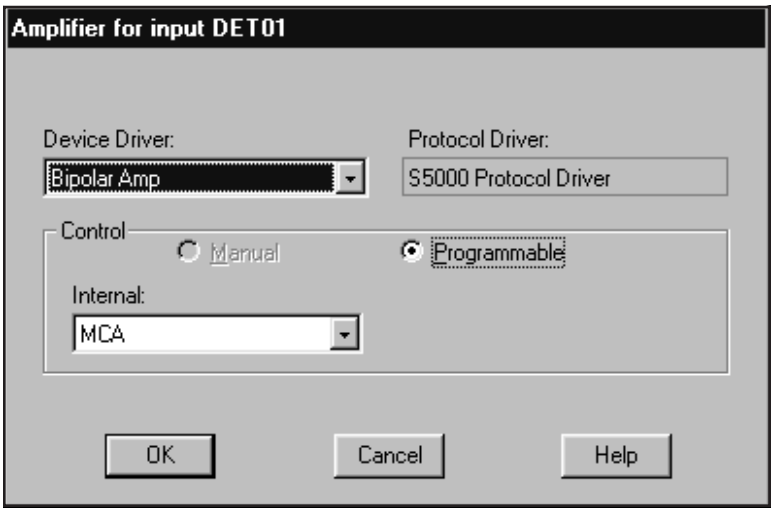

Figure 11 The Amplifier Dialog

The Settings

The commands in the Settings menu, shown in Figure 12, set the MCA's operating parameters. The MCS menu option will not be enabled unless MCS mode has been selected in the MCA device settings.

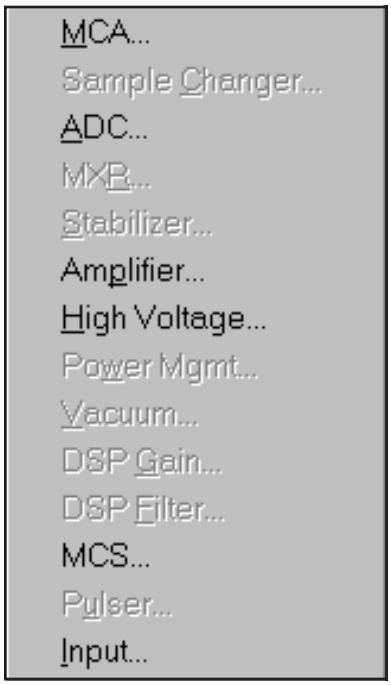

Figure 12 The Settings Menu

Most of these parameters are adjustable both here in the Settings dialog and in the Adjust dialog in the Gamma Acquisition and Analysis application. Some are adjustable only in the Settings dialog. The description of each parameter specifies where the controls can be changed.

MCA

The **MCA** device has no adjustable controls at this level.

ADC

Select **ADC** to display the ADC Settings dialog shown in Figure 13, which is used to set the initial operating parameters for the Series 5000's programmable ADC.

Since many of the ADC's Scroll Bar controls may need to be changed often in the course of daily work, they can be adjusted both here and in the Gamma Acquisition and Analysis application.

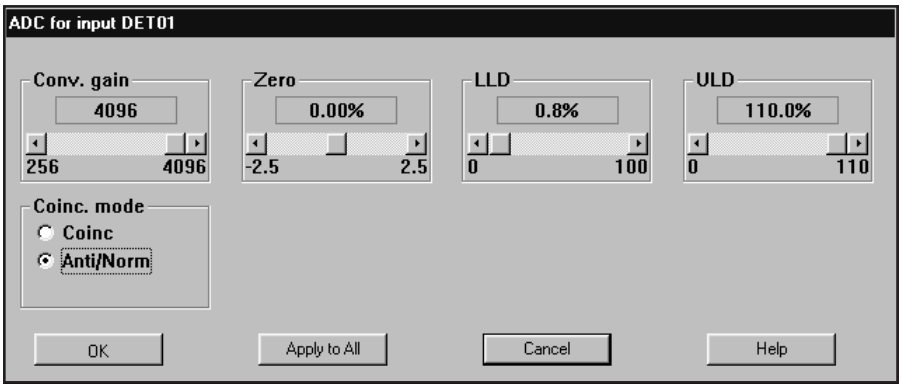

Figure 13 ADC Settings Dialog

Conv. Gain

This control sets the Conversion Gain of the ADC. Clicking on either of the arrows at the ends of the Scroll Bar will change the gain by a factor of two. The upper limit of the Conversion Gain depends on the installed Series 5000 hardware, as follows:

Series 5002:	2048 channels
Series 5004:	4096 channels
Series 5008:	8192 channels
Series 5016:	16 384 channels

This control is available both here and in the Gamma Acquisition and Analysis application.

LLD and ULD

The ADC's Lower Level Discriminator (LLD) can be set from 0.0% to 100.0% of the ADC's full-scale input. The ADC's Upper Level Discriminator (ULD) can be set from 0.0% to 110.0% of the ADC's full-scale input. The window between the ULD and the LLD limits the energy range to be considered by the ADC. For example, setting the ULD at 90% and the LLD at 10.0% means that only the pulses between 10.0% and 90% of full scale will be converted by the ADC. Both controls are available here and in the Gamma Acquisition Analysis application.

Zero

This control sets the ADC Zero offset over the range of ±2.5% of full scale. This control is available both here and in the Gamma Acquisition and Analysis application.

Coincidence Mode

This control sets the ADC's input gating to either **Coincidence** mode or **Anticoincidence** mode. This control can only be changed here in the Settings dialog.

Amplifier

Selecting this command from the **Settings** menu will pop up the Dialog Box shown in Figure 14. Though many of the Amplifier controls can also be adjusted in the Gamma Acquisition and Analysis application, the Preamp Type and Inhibit polarity can be changed only in this Dialog Box.

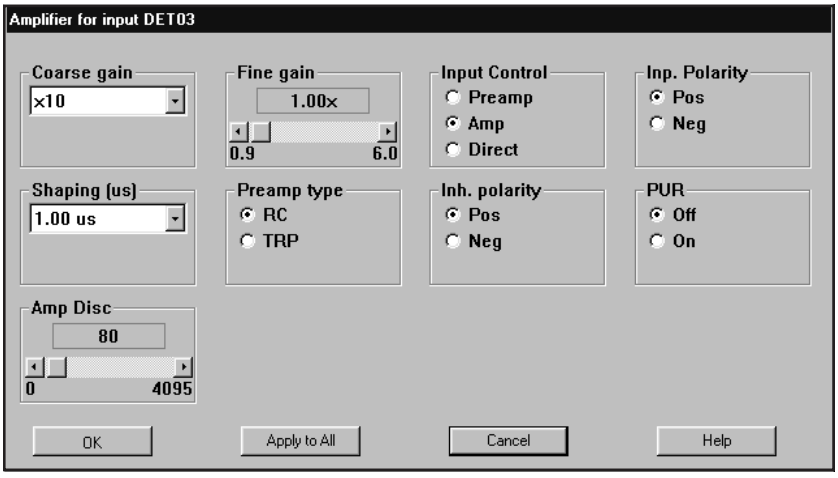

Figure 14 The Amplifier Setting Dialog

Amplifier Gain

Two controls are used to set the amplifier's gain: Coarse Gain and Fine Gain. The total gain is the product of the two settings. Both controls are available at run time.

Coarse Gain

The **Coarse gain** setting can be selected as x2, x10, x50 or x250.

Fine Gain

The **Fine Gain** is adjustable from x0.9 through x6.0.

Input Control

This control, which selects the path of the input signal, has three settings: Direct, Amp, Preamp.

- For the Model 5000-ADC, you must always use the **Direct** setting, which connects the input signal to the ADC.
  For any other models, select **Direct** only if you want to use an external amplifier instead of the internal amplifier.

- If you're using an external preamplifier, select **Amp** to connect the input signal to the internal amplifier, then to the ADC.

- If you're using no external electronics, select **Preamp** to connect the input to the internal preamplifier, then to the internal amplifier, then to the ADC.

Inp. Polarity

This control selects the expected polarity of the input signal.

Shaping

This control sets the shaping time constant of the internal amplifier. The available choices will vary depending on the installed MCA model as follows:

Series 5002: 0.5, 1.0 and 2.0 µs

Series 5004: 0.25, 0.5, 0.75, 1.0, 2.0, 3.0 and 4.0 µs

Series 5008: 1.0, 2.0, 4.0 and 8.0 µs

Series 5016: 0.50, 1.0, 1.5, 2.0, 4.0, 6.0 and 8.0 µs

This control is available both here and in the Gamma Acquisition amd Analysis application.

Preamp Type

This control specifies the preamplifier type: **TRP** (transistor reset preamp) or **RC** (RC coupled). This control can only be changed here in the Settings dialog.

For TRP operation, please note the following:

1. For optimum performance the **Pole/Zero** setting will automatically be forced to 0 (zero) therefore the **Pole/Zero** setting will have no effect at run-time.

2. Both the preamp's Inhibit signal polarity and Input signal polarity must be set to match the preamp's specifications. Both controls are available in the MID Editor. Only the Input polarity control is available at run time.

Inh. Polarity

If you're using a reset-type preamplifier, such as a TRP, the polarity of the preamp's Inhibit output signal connected to the Series 5000 hardware must be selected here to **Positive** or **Negative** in accordance to the preamplifier's specifications.

PUR

This control turns the amplifier's Pileup Rejector (PUR) **On** or **Off**. When PUR is on, a Live Time correction is performed for pulses that are piled up and rejected. This is reflected by the increase in dead time.

Canberra recommends turning the PUR **On** when measuring high count rates. When used with very low count rates (<100 cps) the PUR should be turned off. The PUR threshold is adjusted with the Amp Disc control.

Amp Disc

This control should be set above the system noise level to prevent false triggering and to prevent noise pulses from being processed; the range is from 0 to 4095. When setting the Amp Discriminator, the PUR should be on, acquisition enabled, and the input rate should be within the 1000 to 2000 cps range.

To start, set the control at maximum while observing the system dead time. Clear data as necessary to get an accurate reading of the dead time.

Next, continue to reduce the setting until a sharp increase in dead time is observed, then set the discriminator threshold approximately 10% to 20% above the current setting.

High Voltage

The **Settings** menu's **High Voltage** command sets up the High Voltage Power Supply based on the type of high voltage power supply selected through the Device menu's High Voltage command.

The Manual HVPS has no adjustable settings.
Figure 15 shows the settings for the AHV-2PC power supply.

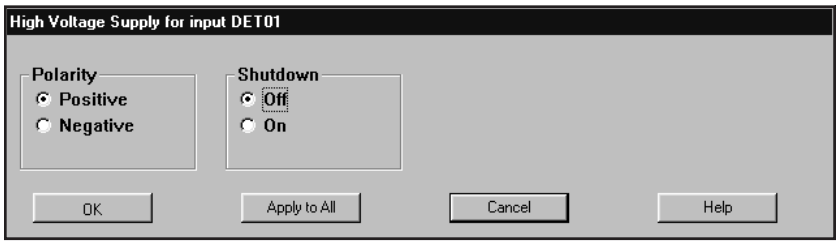

Figure 15 Setting the AHV-2PC Power Supply

Polarity

The output polarity of the Model BB-200 is fixed at positive and cannot be changed. The **Polarity** setting on the AHV-2PC can be set to **Positive** or **Negative** and as such will determine which output Lemo-HV connector will be used. This control is not available at run-time.

Shutdown

The **Shutdown** setting enables (**On**) or disables (**Off**) the power supply's external input signals that are capable of shutting down the high voltage power supply. These include LN_2 Sensor, Leakage Current, and External Shutdown. This control is available here and at run-time.

MCS

There are no adjustable controls for the MCS device. Adjustable controls are available at run-time (see page 24).

Input

The **Input** command, Figure 16, is used to change the name of the Input and define the Input. These commands are not available in the Gamma Acquisition and Analysis application.

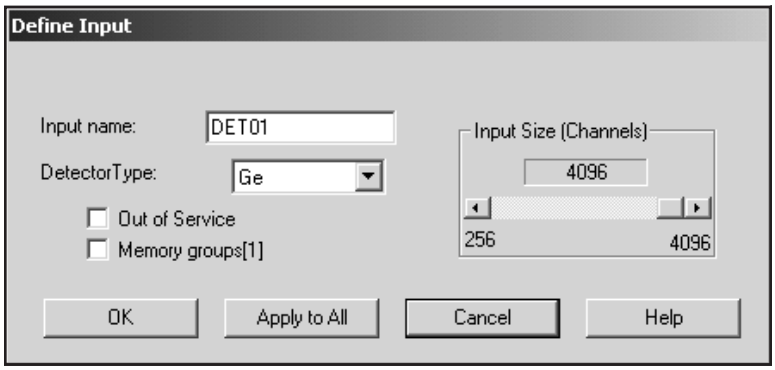

Figure 16 The Define Input Dialog

Input Name

The default DET*nn* name is initially assumed as the name for your Input. But since it is displayed in a Input name text box, you can easily change the name by clicking on the current name to select it, then typing in the new name, which can be up to eight characters long. This is the name by which the detector is referred to in all applications.

Detector Type

Use this drop-down list to select the type of detector to be used with this MCA; this also assigns appropriate default values to the spectrum display and analysis parameters.

Input Size

This parameter defaults to the number of channels that you selected during the MCA Device setup. To use less than the maximum available memory, slide the Scroll Bar to select the size you want.

Out of Service

Select the Out of Service check box when the MCA or its front end electronics are temporarily disconnected from the system. Though the MCA will still be listed in your MCA Definition File, it will not be available for data acquisition.

Memory Groups

This box is used with the Input Size control to logically segment the MCA's full memory into halves, quarters, etc. Note that this control is enabled for PHA operation only. Using memory groups is a two-step process.

1. First, use the Input Size control to set the acquisition memory size to less than the MCA's full memory size. For example, to segment a 4096-channel memory into two equal acquisition memory segments, set the control to 2048.

2. Enable Memory Groups by selecting its check box. The number of available groups will be displayed in the brackets to the right of the control. Using the previous example, the memory will be segmented into two groups of 2048 channels each.

Refer to the "MCA Input Definition" and "Gamma Acquisition and Analysis" chapters of the *Genie-2000 Operations Manual* for additional information on defining and using Memory Groups.

Saving and Loading the Input Definition

Having completed a definition, the next step is to save it in a disk file so it can be used in the future. Use the **Save** and **Save as** commands under the **File** menu to save the definition.

After having saved the definition, the next step is to load it into the run-time database so that it can be used by the Genie2000 applications. Use the **Load To** command to load the definition.

Refer to the "MCA Input Definition" chapter of the *Genie 2000 Operations Manual* for additional information regarding saving and loading definition files, as well as editing existing files.

3. The MCA Adjust Screens

The MCA Adjust Screens, which are accessed from the Gamma Acquisition and Analysis application's Menu Bar, allow you to adjust the Series 5000 MCA's run-time controls.

You can access the MCA Adjust screens after having defined an MCA Input Definition (MID), as described in "Defining the Series 5000", starting on page 2.

Accessing the Adjust Screens

Start the "Gamma Acquisition and Analysis" program contained in the Genie-2000 folder, open the detector (datasource) you just have defined, and select the **MCA | Adjust** menu option.

To open the datasource, select **File | Open Datasource**, then select **Detector** in the Type box. Next, select the datasource file and click on **Open**.

As adjustments are made in the dialog box, the new values are sent to the MCA. To save the adjustments to the datasource's CAM file, use the Gamma Acquisition and Analysis application's **File | Save** command so that the next time this datasource is selected, the proper setting will be loaded into the MCA.

The **Next**and **Previous** buttons at the left side of the Adjust screen are used to move to the next (or previous) page of the controls when there are more control elements than will fit in the basic box.

Note: If you get a "Required Hardware Unavailable" error, possible causes are: selecting the wrong datasource for the instrument, an I/O address mismatch (see instructions above) or an I/O address conflict (means that the selected I/O address is already in use by some other device within your PC). In case of an I/O address conflict use SW1-1 through SW1-4 switches to set your Series 5000 MCA's address or board number to another (free) one, then edit the datasource with the MID Editor to make corresponding changes in the configuration.

If you get a "Hardware Verification Error", there is a mismatch between the MID Definition setup and the hardware configuration. You can choose to accept or not accept the verification error in the associated dialog box. If you select No, a RED error box will appear in the top left corner of the Gamma Acquisition and Analysis window. To determine the source of the verification error, open the Status Page by clicking **MCA | Status** in the Acquisition and Analysis window. The problem item will be marked with an asterisk (*).

Each of the following sections describes the Series 5000 MCA parameters that can be changed in the Gamma Acquisition and Analysis (GAA) application's Adjust dialog.

To change a parameter, click on **MCA | Adjust** in the GAA's Main Menu, then select the control for the parameter you want to change.

A description of the device's controls can be found in "MCA Input Definition Editor" on page 6. Those controls that are available only at run-time are described this section.

ADC Parameters

The ADC Settings screen (Figure 17) contains the **Conversion Gain**, **Zero**, **LLD**, and **ULD** run-time parameters. These are identical to the settings in the MID editor.

Figure 17 Adjusting the ADC Settings

Amplifier

The Amplifier's run-time controls spread among three dialog pages, as shown in Figures 18, 19, and 20. The **Pole/Zero**, **Pulser**, and **Pulser Energy** are run-time parameters that were not accessible in the MID Editor.

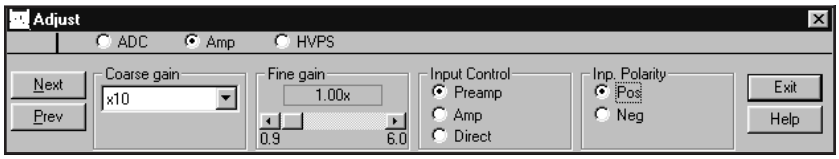

Figure 18 Adjusting the Amplifier Settings- Page 1

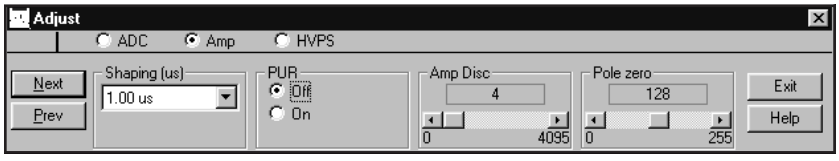

Figure 19 Adjusting the Amplifier Settings- Page 2

Figure 20 Adjusting the Amplifier Settings- Page 3

Pole/Zero

Sets the internal amplifier's pole/zero parameter. The following notes apply to the Pole/Zero setting:

1. For TRP-type preamplifiers the pole/zero setting will automatically be forced to 0 (zero)

2. For Bipolar amplifier selections, the Pole/Zero setting will be set to 128 (mid-scale)

Pulser and Pulser Energy

These settings apply to the Series 5000's internal test pulser. The Pulser can be enabled (**On**) or disabled (**Off**), and if enabled its amplitude can be set to 0.01V, 0.1V, or 1.0V.

High Voltage Power Supply

The HVPS run-time settings will appear if either the BB-200 (Figure 21) or AHV-2PC (Figure 22) high voltage power supply was selected during the MID Editor session. Both the **Status** and **Voltage** are run-time parameters that were not available during the MID Editor session.

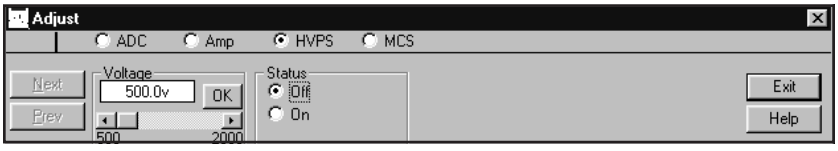

Figure 21 Settings for the BB Power Supply

Figure 22 Settings for the AHV-2PC HVPS

For the AHV-2PC HVPS type the output voltage will ramp at approximately 50 volts/sec. While ramping, the HVPS Adjust dialog will remain locked as indicated by **Wait** in its status box.

MCS

The MCS adjust dialog (Figure 23) with associated run-time parameters will appear only if MCS acquisition mode was selected during the MID Editor session.

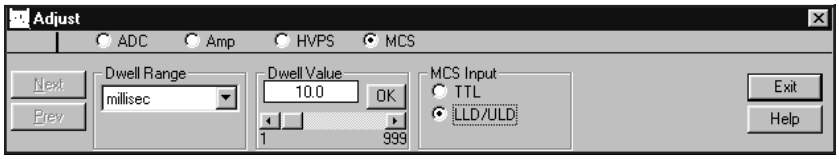

Figure 23 Adjust Screen MCS Settings

The **Dwell Time** can be set to integer values ranging from 1µs to 999 s over three ranges. The **Dwell Range** can also be set to **External** if an external dwell pulse is to be used.

The **MCS Input** mode can be set to **TTL** to count external TTL pulses, or **LLD/ULD** to count events between the ADC's LLD and ULD energy window.

Adjustments to the MCS run-time parameters must be made with acquisition off. Changes to parameters made during acquisition will be ignored.

Acquire Setup Screen

There are two Acquire Setup screens, one for the PHA mode (Figure 24) and one for the MCS mode (Figure 25) of acquisition Preset conditions and external start/stop operations are setup through the Acquire Setup screens.

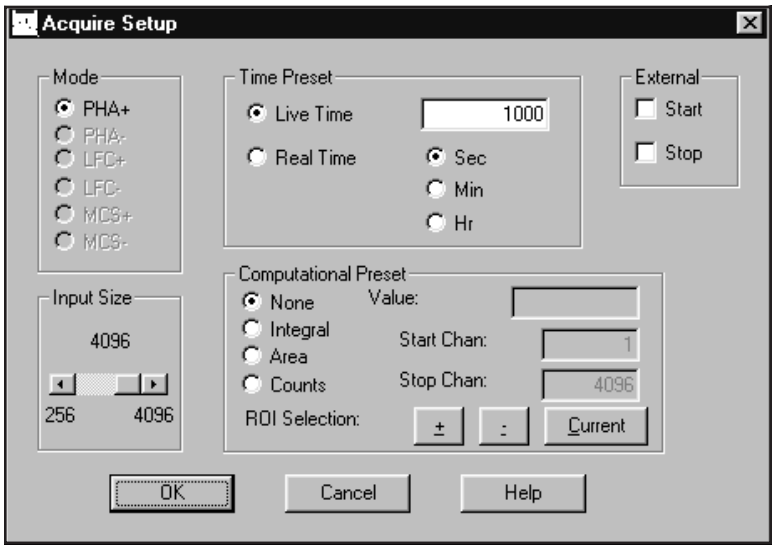

Figure 24 Acquire Setup for PHA

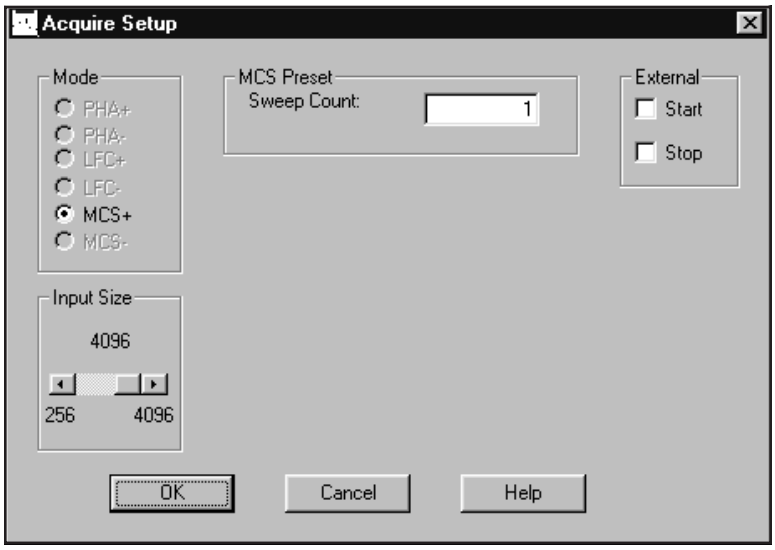

Figure 25 Acquire Setup for MCS

Note: Due to hardware limitations, the preset sweeps in MCS mode is always 1 regardless of the setting in the Acquire Setup dialog box.

A. Notes on Series 5000 Operation

The AHV-2PC High Voltage Power Supply

When using the AHV-2PC High Voltage Power Supply the board's addressing switches must be set to the same settings as those of the MCA from which the power supply will be controlled. For example, if the MCA board is set for base 28X/bd#1 then the power supply must be set to 28X/bd#1.

Limitations of the Series 5000

The following limitations apply to the Series 5000

- Pole/Zero setting is supported in manual mode only. For optimum performance, an oscilloscope is required to correctly adjust the pole/zero for Unipolar and Gated modes. In Bipolar mode, the pole/zero setting is automatically set to midscale (128).
- The LN_2 level is not returned to the user interface.
- HVPS alarm annunciators for LN2, Leakage Current, and External Shutdown are not supported. External Shutdown signals are supported.
- PUR setting is supported in manual mode only. Adjustments for optimum performance are made using the system Dead Time as instructed by the procedure in the "MCA Input Definition Editor" section on page 6.
- Due to hardware limitations, the preset sweep counter in MCS mode is always 1, regardless of the value entered.
- When the TRP-type preamp is selected, the pole/zero setting is automatically forced to minimum (0) in order to achieve optimum performance.
- When using groups, the ADC Conversion Gain is limited to the size of the group. Changing the ADC Gain will have no effect.
- Groups are not allowed in the MCS acquisition mode.
- The amplifier's Input Control setting is displayed in the MCA Status Page and reports the output as: 0 = Preamp, 1= Amp, 2 = Direct.

B. Registry Defaults

Settings not included in the user interface have been placed under the following registry key:

HKEY_LOCAL_MACHINE\SOFTWARE\Canberra Industries, Inc.\ Genie-2000 Environment\S5000_DEFAULTS

The key will be created if one does not exist. If the entry exists, the current value will be used. Therefore, any changes made to the default settings will be preserved. The same default value applies to all boards. Initial default value for S5000_DEFAULT is 0008FF80 hex.

The default value is stored as a DWORD (32-bit quantity), where each individual bit represents a predefined function. The default setting for any function can be changed using the operating system's registry editor. Refer to the operating system documentation for instructions on using the registry editor.

The table below indicates the functionality of each bit.

CAUTION It is highly recommended that edits to the registry be made only by experienced users. Improper edits can render your entire system inoperative.

Bit	Value (hex)	Function	Setting	Default
0	00000001	Store pulses above LLD threshold	0 = reject, 1 = store into last memory channel	0
1	00000002	Linear Gate Polarity	0 = Active low, 1 = Active high	0
2	00000004	Reject Input Polarity	0 = Active Low, 1 = Active high	0
3	00000008	Coincidence Input Polarity	0 = Active high, 1 = Active Low	0
4	00000010	Coincidence Method	0 = Level sensitive, 1 = Edge sensitive	0
5	00000020	Dead Time Input Polarity	0 = Active Low, 1 = Active High	0
6	00000040	Reserved		0

Bit	Value (hex)	Function	Setting	Default
7	00000080	Reserved		1
8	00000100	External MCS Pulse Polarity	0 = Count on High to low transition 1 = Count on Low to High transition	1
9	00000200	External MCS Advance Polarity	0 = Advance on High to low transition 1 = Advance on Low to High transition	1
10	00000400	Reserved		1
11	00000800	Reserved		1
12	00001000	Reserved		1
13	00002000	AHV-2PC HVPS External Input Shutdown Enable Mask	0 = Disable, 1 = Enable	1
14	00004000	AHV-2PC HVPS LN_2 Input Shutdown Enable Mask	0 = Disable, 1 = Enable	1
15	00008000	AHV-2PC HVPS Leakage Input Shutdown Enable Mask	0 = Disable, 1 = Enable	1
16	00010000	External Offset	0 = Disable, 1 = Enable	0
17	00020000	Reserved	0 = Disable, 1 = Enable	0
18	00040000	Reserved	0 = Disable, 1 = Enable	0
19	00080000	External Offset Polarity	0 = Active Low, 1 = Active High	1
20	00100000	X Output Polarity	0 = Active Low, 1 = Active High	0
21	00200000	X Offset Mask 0	0 = Force XOFF0 to 0, 1 = Allow XOFF0 through	0
22	00400000	X Offset Mask 1	0 = Force XOFF1 to 0, 1 = Allow XOFF1 through	0
23	00800000	X Offset Mask 2	0 = Force XOFF2 to 0, 1 = Allow XOFF2 through	0

Bit	Value (hex)	Function	Setting	Default
24	01000000	X Offset Mask 3	0 = Force XOFF3 to 0, 1 = Allow XOFF3 through	0
25-31		Spares		0…0

CANBERRA

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